

Honorable Thomas S. Zilly

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON AT SEATTLE

FAIR HOUSING CENTER OF
WASHINGTON,

Plaintiff,

v.

BREIER-SCHEETZ PROPERTIES, LLC, a
Washington corporation; and FREDERICK
BREIER-SCHEETZ, an individual,

Defendants.

No. 2:16-cv-00922-MAT

DECLARATION OF DR. AVERY MASON
GUEST IN SUPPORT OF PLAINTIFF'S
RESPONSE IN OPPOSITION TO
DEFENDANT'S MOTION TO DISMISS,
AND PLAINTIFF'S MOTION FOR
SUMMARY JUDGMENT

Attached is a true copy of the declaration of Dr. Avery Mason Guest.

DECLARATION OF DR. AVERY MASON GUEST IN SUPPORT OF
PLAINTIFF'S RESPONSE IN OPPOSITION TO DEFENDANT'S MOTION TO
DISMISS, AND PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT

No. 2:16-cv-00922-MAT
10017.04 ka048502

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Disparate Impact Report of Dr. Avery Mason Guest

Dr. Avery Mason Guest declares and states as follows:

I. BACKGROUND

I was a Professor of Sociology and adjunct Professor of Geography at the University of Washington in the period 1972 - 2003. I was a Professor of Sociology at the University of Washington from 1983 to 2003. After official retirement, I continued to teach and conduct research at the University of Washington until 2008. I am now an Emeritus Professor of Sociology at the University of Washington. I continue to conduct some research. From 1975 through 1983, I was an Associate Professor of Sociology at the University of Washington. From 1972 through 1975, I was an Assistant Professor of Sociology at the University of Washington.

I served as Acting Chair of the Department of Sociology at the University of Washington in 1994 and as Acting and Interim Director of the interdisciplinary Center for Studies in Demography and Ecology from 1993 to 1997.

I hold a B.A. from Oberlin College in Sociology, an M.S. from Columbia University in Journalism, an M.A. from the University of Wisconsin in Sociology and a PhD from the University of Wisconsin in Sociology.

I have been a member of numerous professional societies including the American Sociological Association, the Population Association of America and the Social Science History Association. From 1993 through 1995 and again between 1998 and 2001, I served as a member of the Board of Directors of the Population Association of America. From 1991 through 1993, I was editor of Demography. From 1990 through 1995, I was a member of the Editorial Board of the Urban Affairs Quarterly. I have also served as a consultant to the City of Seattle Planning Department.

I have served as an academic consultant on three previous court cases that involved issues of housing discrimination against protected classes of the population. I have also served as an academic consultant for the Sierra Club in efforts to reduce the unusually high levels of pesticides encountered by agricultural workers.

I have written numerous articles, papers and book sections related to population patterns including the racial and ethnic composition of certain populations, including "Another Look at Residential Turnover in Urban Neighborhoods," in American Journal of Sociology 77 (Nov. 1971): 457-67; "Patterns of Family Location" in Demography 9 (Feb. 1972): 159-71; "Urban History, Population Densities, and Higher Status Residential Location," in Economic Geography 48 (Oct. 1972): 375-87; "Urban Growth and Population Densities," in Demography 10 (Feb. 1973): 53-69; "Congestion, Concentration and Behavior: Research in the Study of Urban Population Density," in Sociological Quarterly 5 (Fall 1994): 488-506; "Population Suburbanization in American Metropolitan Areas, 1940-1970," in Geographical Analysis 7 (July 1975): 267-83; "Patterns of Suburban Growth, 1970-75," in Demography 16 (Aug. 1979):

401-15; "Gatekeeping Among the Demographers" at 85-105 in Rita J. Simon and James J. Fyfe (eds.), Editors as Gatekeepers, Lanham, M.D.: Rowman and Littlefield Publishers, Inc., 1994.

I have reviews for the following books: American Neighborhoods and Residential Differentiation, by Michael J. White (reviewed in American Journal of Sociology 95 (1989): 505-07); and Population Distribution in American Cities, by Barry Edmonston (reviewed in Contemporary Sociology 5 (1976): 603-04).

I wrote a section of Contemporary Topics in Urban Sociology (1976) entitled "Residential Segregation in Urban Areas." Other writings in this topic area include "The Changing Racial Composition of Suburbs, 1950-1970," Urban Affairs Quarterly, 14 (December, 1978): 195-206, "Paths of Community Integration" (with Keith R. Stem), The Sociological Quarterly, 34 (1993): 581-595, and "Communication and Community Integration: An Analysis of the Communication Behavior of Newcomers" (with Keith R. Stamm), Journalism Quarterly, (1991): 644-656.

Since my official retirement as a professor from the University of Washington in 2003, I have published the following papers in academic outlets, "Residential Mobility," Pp 1171-1174 in Karen Christensen and David Levinson (eds.), Encyclopedia of Community: From the Village to the Virtual World. Thousand Oaks, CA: SAGE Publications, 2003; "Economic Distress and Cause-of-Death Patterns for Black and Nonblack Men in Chicago: Reconsidering the Relevance of Classic Epidemiological Transition Theory," Social Biology 50 (2003):102-126; "Frontier and Urban-Industrial Explanations of U.S. Occupational Mobility in the Late 19th Century," Social Science Research 34 (2005):140-164; "Population Distribution and Suburbanization," Pp. 57-84 in Dudley Poston and Michael Micklin (eds.), Handbook of Population. New York: Springer, 2005; "Neighborhood Context and Neighboring," City and Community 6 (2006): 363-385; "Fertility in New York State in the Pre-Civil War Era" Demography 45 (2008): 345-361; "Heterogeneity and Harmony: Neighboring Relationships among Whites in Ethnically-Diverse Neighborhoods," Urban Studies 45 (2008): 501-526; "World Urbanization: Destiny and Reconceptualization," Selection 5 in Laszlo J. Kulcsár and Katherine J. Curtis (eds.), International Handbook of Rural Demography. New York: Springer, 2012; "Intergenerational Occupational Mobility in Great Britain and the United States Since 1850: Comment," American Economic Review 103 (2013) 2021-2040; "Universalism as liberal Religion and the 1845 Antislavery Protest," Journal of Unitarian Universalist History 38 (2014-2015): 127-153.

Much of my research and teaching has involved the use of census data, a necessary qualification for this court case that is based on 2015 census data on the population of King County, Washington.

A true copy of my curriculum vitae is attached as **Appendix A**.

II. SCOPE OF ISSUE FOR THIS REPORT

I have been asked by the Fair Housing Center of Washington in the case of Fair Housing Center of Washington v. Brier-Scheetz Properties, LLC, a Washington Corporation and Frederick Breier-Scheetz, an individual (United States District Court for Western District of Washington at Seattle (No. 2:16-cv-00922 MAT) to review the potential disparate impact on households

with children of a policy of not renting studio apartment units to more than 1 person. The analysis arises from multiple instances in which potential adult tenants with children were denied the opportunity to rent the studio apartments at The Granada Apartments, 1736 Belmont Ave, Seattle, WA 98122, on the stated grounds of the one-person-per-studio policy.

My analysis in this case is highly indebted to a Disparate Impact Report submitted by Dr. Calvin P. Bradford in the case of the Rhode Island Commission for Human Rights v. Noreen D. Gaul, et al. (United States District Court for the District of Rhode Island, CA No. 13-445M. In that case, Dr. Bradford reviewed the potential disparate impact on households with children of a policy of not renting apartment units with 1-bedroom to households with more than two persons or apartments with 2-bedrooms to households with more than four persons. The court ruled on behalf of the plaintiffs, citing positively some of the results from Dr. Bradford's research that showed disparate impact of the housing policies of the apartment management.

In the Seattle case at hand, the allegations are a bit different in the specific sense that the issue is whether restrictions to one person per unit has the effect of eliminating children from the opportunity to live in The Grenada studio apartments. However, the more general issue is the same, namely whether restrictions on the housing opportunities for adults with children constitute disproportionately discriminatory impact against them that is legally forbidden.

My approach and language duplicate in many respects that of Dr. Bradford. His description of such issues as methods, data sources, and analytic procedures is so clear that I have difficulty improving on them or stating them better. As a result, I present sections in my report that closely or completely parallel Dr. Bradford's report. I believe that other material is less closely related to Dr. Bradford's statements. A true copy of the main text of Dr. Bradford's report is included in my report as **Appendix C**.

In this report, I use a sample of census data for King County (WA) to compare rental households of various sizes in the presence or absence of children. A family of children is defined as a household where at least one of the occupants is a person under the age of 18. I find that children are starkly underrepresented in households of one or two persons. Since my analyzed data are drawn from a sample, I consider the possibility that the patterns result from sampling errors. However, tests of statistical significance indicate clearly that the differences in housing outcomes for households without children are undoubtedly strong in the general population of King County renters. Any policy that restricts rental housing units to one or two persons has important negative effects on the protected class of households with children.

III. INFORMATION REVIEWED

To prepare my opinion, in addition to any documents or publications that that may be specifically referenced in the text of the report, I reviewed the following:

Interview Statement of Frederick Breier-Scheetz, January 6, 2015. Before the Seattle Office for Civil Rights.

Interview Statement of Jo Ann Huth, February 4, 2015. Before the Seattle Office for Civil Rights.

Findings of Fact and Determination and Offer to Conciliate, Before the Seattle Office for Civil Rights, Case No. 14HO023, Fed No. 10-14-0129-8, Fair Housing Center of Washington, Complainant vs. Gary Huth; Joann Huth; Frederick Scheetz; Breier-Scheetz Properties, LLC, respondents.

Complaint for Damages and Equitable Relief/Jury Demand. Fair Housing Center of Washington, June 16, 2016. Plaintiff, v. Breier-Scheetz Properties, LLC, a Washington corporation; and Frederick Breier-Scheetz, an individual, defendants, U.S. District Court for Western Washington.

Answer to Complaint and Affirmative Defenses, July 7, 2016. Fair Housing Center v. Breier-Scheetz Properties.

Plaintiff's First Set of Interrogatories and Requests for Production to Defendants/Amended Answer and Response, August 26, 2016. Fair Housing Center v. Breier-Scheetz Properties, LLC, and Frederick Breier-Scheetz.

Defendants' Motion to Dismiss/Note on Motion Calendar: January 13, 2017, December 2, 2016. Fair Housing Center v. Breier-Scheetz Properties.

Bureau of the Census. 2016. PUMS 2015 Data File in SAS Format. Available at https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_pums_sas_2015&prodType=document.

Bureau of the Census. 2016. PUMS Documentation, at <http://www.census.gov/programs-surveys/acs/technical-documentation/pums.html> 2015. This site includes access to the documents that I have used: ACS Accuracy of the Data and the 2015 Data File Dictionary.

Declaration of Dr. Avery Mason Guest in Support of Plaintiffs' Cross Motion for Partial Summary Judgment. Case No. C00-251C. U.S. District Court, Western Washington. Juma Sowe and Titania Sowe, Plaintiffs, v. Joanne Laz.

Disparate Impact Report Submitted by Dr. Calvin P. Bradford, July 3, 2014. Case CA No. 13-445M. U.S. District Court for the District of Rhode Island. Rhode Island Commission for Human Rights v. Noreen D. Graul, et al.

The documents provided to me state that the units have approximately 425 square feet. From a habitability standpoint, The Granada apartments seem suitable for populations above one person per unit. The applicable Municipal Code on habitability has the following first three sections (The other omitted sections do not seem relevant):

22.206.020 - Floor area.

- A. Every dwelling unit shall have at least one (1) habitable room which shall have not less than one hundred twenty (120) square feet of floor area.
- B. No habitable room except a kitchen may be less than seven feet (7') in any floor dimension.
- C. Every room used for sleeping purposes, including an SRO unit, shall have not less than seventy (70) square feet of floor area. Every room, except an SRO unit, which is used for both cooking and living or both living and sleeping quarters shall have a floor area of not less than one hundred thirty (130) square feet if used or intended to be used by only one (1) occupant, or of not less than one hundred fifty (150) square feet if used or intended to be used by two (2) occupants. Where more than two (2) persons occupy a room used for sleeping purposes, the required floor area shall be increased at the rate of fifty (50) square feet for each occupant in excess of two (2).

IV. THE BASIC CONCEPTS AND LOGIC FOR THE DISPARATE IMPACT ANALYSIS**The Identification of the Groups to Compare:**

Disparate impact analysis requires the identification of the proper groups for comparison. The proper groups to compare depend upon the facts of the case. The question in this case is whether a protected class is disproportionately and unfavorably impacted by a policy or practice when compared to a comparable non-protected class.

In an analysis such as this case, it is generally the proportions (percentages) of the protected class and comparable non-protected class affected by the policy or practice that must be compared. Indeed, the term "disparate impact analysis" is a shortened version of the full-term "disparate proportional impact analysis". Whatever the proper groups to compare, one does not simply compare the simple number of persons in either group. In this case, the protected class is households with children. Therefore, in this case, it is households with children that is compared to households without children when controlling for household size.

Within these two populations of households, one needs to compare the proportion (percentage) of each type of household that has a given number of persons, as it is this subpopulation of household size that is subject to the occupancy policy at issue in this case. If this percentage is significantly higher for families with children, then the policy has a disparate impact on families with children.

App. C (Bradford Decl.) at page 3.

The Identification of the Data for the Comparison:

One needs to secure a reasonable source of data that allows one to compare the impact on households with and without children. This requires a set of data from which one can calculate the number of occupied households that have children under 18 years of age and the number of occupied households that do not include any children under 18 years of age. Second, these data must allow for the calculation of the proportion of these households that contain specific numbers of persons. Because the case involves a policy for rental units, the comparisons of household should be specific to renter households. In addition, while it may be reasonable to simply compare all renter households with a selected number of persons with and without children, the comparison may be defined more finitely in terms of households within income ranges that would be most likely to rent such apartments.

App. C (Bradford Decl.) at pages 3-4.

In their motion to dismiss the Fair Housing Center lawsuit, Defendants set some criteria for determining disparate impact of The Granada policy on number of renters per unit. They state, "...the appropriate comparison pool must comprise multiple person rental households that have an income enabling them to afford apartments that rent for approximately \$870 per month. A necessary further refinement of the comparison pool would result in the creation of sub-pools that control for group size. These sub-pools would allow a comparison of: for example, two person families, one of whose members is a child under the age of 18, and two person households without a child under the age of 18. The policy at issue would prevent both sets of households from renting Defendants' studio apartments." Def's Motion at page 22.

Therefore, in addition to a simple comparison of all renter households with selected numbers of persons this analysis also compares subsets of these households paying rent levels at or above \$870. Households paying at least \$870 should be able to afford living in The Granada Apartments. To further check our results, I will also analyze another sample where the renters above \$870 are divided into two relatively equal groups according to how much above \$870 they pay in rent. This more specified analysis will be reported in **Appendix B**.

Next, the disparate impact analysis for housing cases needs to be related to a specific geographic area. This would be the general housing market where the subject property is located. The apartment complex at issue is located at The Granada Apartments, 1736 Belmont AVE, Seattle WA 98122. The Granada is in the Capital Hill area of Seattle near the downtown business district. There are a number of other apartment complexes in the general area.

For our purposes, the market area for renting will be considered as King County, including the Seattle central city and a number of suburbs within King County. Data are also available for Pierce County to the south, with Tacoma as the major population center, and Snohomish County to the north, with Everett as the major population center. While the links among these

counties are numerous, I believe that Pierce and Snohomish Counties are somewhat segregated from King County as employment and residential centers. It seems best to exclude them from the analysis since their housing markets may be organized somewhat differently than that of King County.

The Data Set Used in This Report:

The data sets used in this report come from the files of the [United States] Census Bureau. While I am concerned with the comparison of households with and without children by household size, none of the predefined and pre formatted tables from the Census Bureau surveys provide these data directly. On the other hand, there are sets of census data that provide samples of the full responses of individual households to the detailed census survey questionnaires. These data sets can be used to construct these direct comparisons.

The disparate impact analysis tests to see whether there is a statistically significant difference between households with children and households without children. I use the Census Bureau's definition of a housing unit "as a house, an apartment, a mobile home or trailer, a group of rooms, or a single room that is occupied, or, if vacant, is intended for occupancy as separate living quarters." This analysis only studies occupied housing units and does not include group quarters such as college dorms. My definition of child follows Census definition as a person under 18 years old.

I use The American Community Survey (ACS), an annual survey of a sample of households from across the country. Samples are taken through a complex sampling design to provide a base for annual and multiyear estimates of demographics within various geographic units and for the nation. Essentially, this survey replicates the long form of the questionnaire that had previously been used (and that is no longer used) in the decennial censuses.

This set of data is what the Census Bureau calls the Public Use Microdata sample - or the "PUMS". The PUMS provides the individual answers to more than 200 detailed questions for each household and the individuals within those households. In order to ensure the confidentiality of the respondents, this sample does not include small area geographic identifiers, such as townships, census tracts, block groups or blocks. Instead, the smallest geographic areas identifying the location of each respondent are what the Census Bureau terms the "PUMAs" (Public Use Microdata Areas). These are parts of counties, whole counties, or groups of counties that have a large enough population so that the individual who provided the response to the questionnaire could not be identified. PUMAs have a minimum population of 100,000 persons.

App. C (Bradford Decl.) at page 7.

Census references for the structure, design, and implementation of the PUM can be found at <http://www.census.gov/acs/www/data documentation/pums documentation/>.

The PUMS data are commonly made available to analysts through files for single and five-year periods. At the time of my analysis, a single-year file was available for 2015 and a five-year file for 2010-2014. The advantage of the five-year file is that contains a much larger sample of King County households than the 2015 file. However, the 2015 file contains 8,501 households, a large number by the standard of most surveys. In addition, it contains 2,539 rental households with reports of monthly rent. A problem with the five year file is that some of the variable definitions have changed over time, making comparisons difficult.

In the 2015 file, there are 16 defined PUMAS for King County, with relatively equal-sized population. Analyzing child and household size patterns in specific PUMAS is not feasible as there are too few households in most of them to support reasonable statistical analysis. In my opinion, the statistics for most of the PUMAS are based on too few cases to support much analysis below the King County Level.

Distinguishing Between Statistical and Substantive Differences:

In cases of disparate impacts, one needs to understand the two meanings for the term "significant" --- statistical and substantive.

Where the data used represent a sample of all households, mathematical tests of statistical significance are typically required to determine the likelihood that a proportion (percentage) defined for a sample provides a reasonably accurate estimate of the proportion that exists in the actual universe of all households. For the source of the data used in this report, these census data are samples of all the households in the selected area. In such cases, the statistical measures are used to determine how likely it is that the percentage calculated for the sample represents the true percentage in the full population of all households from which the sample was taken. Once these percentages have been estimated for each sample, one can apply statistics to test the likelihood that the true percentages in the actual population are different from each other. It is important in such tests that commonly-used and accepted tests and methods be used. In the case of the census data, the Census Bureau defines how the basic statistics are to be calculated.

As a technical issue, if a set of data represents the full universe of the defined population then there is no issue of sampling or random error and one does not need to test for statistically significant differences. One can simply move on to the substantive evaluation of the significance of the differences. Much of the data that are collected on characteristics of populations in the United States are based on samples that have been drawn to approximate the characteristic of the population.

Once a statistical test has been made, however, there is still the issue of deciding in a practical sense if the difference- even if statistically significant- makes a substantive difference in terms of the claims in the case. This is especially important in cases where the populations being compared are very large. One critical aspect of tests of statistical significance is that they are dependent upon the size of samples. The larger the samples being tested, the more likely it is that very small differences will be statistically significant. Indeed, when the samples being tested have thousands of households, extremely small differences may be statistically significant. Therefore, one also needs to judge the real magnitude of the disparities.

App. C (Bradford Decl.) at page 4.

Statistical significance is almost always easier to obtain when the samples from specific populations are large versus small. In the case at hand, this means that I am using a somewhat conservative test of whether housing discrimination is shown by using the 2015 sample that is somewhat smaller in size than the 2010-2014 sample. By conservative, I mean that statistically significant differences between households containing and not containing children are less likely with the 2015 data than with the 2010-2014 data.

The Use of a Disparity Ratio to Illustrate Substantive Differences:

*There is no clear rule in fair housing cases with regard to making substantive judgments concerning the differences in impacts on the proportions of those affected by the policy or practice in the protected class and those affected by the policy or practice in the control group (or non-protected class). In the literature related to the use of statistical tests in litigation, however, a measure often used in employment cases has been the "Four-Fifths Rule" or the "80 Percent Rule". An extended discussion of the Four-Fifths Rule can be found in Ramona L. Paetzold and Steven L. Willborn, *The Statistics of Discrimination: Using Statistical Evidence in Discrimination Cases* (West Group, 1 996-2002). See chapter 5 (pages 11-17) for a discussion of the use of the rule in employment cases.*

In employment cases, the data are typically based on the percentages of populations that receive favorable treatment. For example, assume that 70% of the white applicants (the control group) would be accepted under a practice but that only 30% of the minority applicants (the protected class) would be accepted under the practice. By the Four-Fifths Rule, if the proportion of minority applicants who would be accepted is less than four-fifths (0.8 or 80%) of the proportion of whites who would be accepted, then the disparity would be considered to be significant in a substantive sense.

In our example, four-fifths of 70% is 56% (70% times 0.8 = 56%). Therefore, if less than 56% of the minority applicants would be accepted, the disparity would be considered significant in a substantive sense. In this example, the

percentage of minorities who would be accepted is only 30%, which is considerably less than 56%. Thus, based on the Four-Fifths Rule, the disparate impact would be considered significant in a substantive sense as well as statistically.

In the case of an occupancy policy that excludes certain households from living in an apartment, the data for comparisons are based on the total proportions of selected groups who would be adversely affected in their range of housing opportunities. In these situations, one is comparing negative impact rates rather than the positive impacts of job acceptance rates as in employment cases. One way to apply a Four-Fifths Rule in a housing case where rejection rates rather than acceptance rates are typically at issue is to reverse the comparisons. In that case I would ask whether the percentage of households in the control group (households with no children, for example) who are being denied housing based on the policy is less than 80% of the percentage of households in the protected class (households with children, for example) who are being denied housing.

Consider a case where the denial of housing would affect 10% of households without children and 12.5% of those with children. By applying a four-fifths comparison to this example I would divide the proportion of households without families that are affected by the practice (10%) by the proportion of the families with children that are affected by the rule (12.5%). The result is a ratio equal to 0.8. This means that by this application of the Four-Fifth Rule, the percentage of households without children who would be adversely affected is exactly 80% of the percentage of families with children who would be affected. In this format, any ratio less than 0.8 would define a substantive disparate impact by the Four-Fifths Rule.

App. C (Bradford Decl.) at page 5.

Using the same example, if the percentage of households without children that was denied housing was actually 8% instead of 10%, then the calculation for the Four-Fifths Rule would be 8% divided by 12.5%. This would produce a ratio equal to 0.64. That is, 8% is only 64% of 12.5%. Because 64% is less than 80%, the disparity would be considered significant in a substantive sense.

The same proportions may be used to calculate a "disparity ratio" in a format that has been more commonly employed to express disparities in fair housing cases. I invert the ratio and divide the protected class proportion (households with children) by the control group proportion (households with no children). Using the original proportions in this example, this would be 12.5% divided by 10%, or 1.25. This is simply the inverse of the previous calculation of 0.8. When the comparisons are inverted, the logic is now that there would be a

disparity that is substantively significant whenever this "disparity ratio" is greater than 1.25.

We can see how this works when I assume that the percentage of households without children that are adversely affected by that policy or practice is 8% rather than the original 10%. I calculate the "disparity ratio" by dividing the protected class proportion (12.5%) by the control group proportion (8%). The result is 1.56. Based on this application of the inverse of the Four-Fifths Rule any disparity ratio greater than 1.25 would be defined as having a substantive disparate impact. Therefore, by applying this version of the 80% rule in this example, the disparity would be considered to be significant in a substantive sense.

This "disparity ratio" creates a version of the Four-Fifths Rule that can be generally applied to housing cases where the policy has an adverse impact on those affected. We could call this the Five-Fourths Rule or, perhaps a less confusing term would be the 125% Rule. This format has the advantage of a direct link between the size of the disparity ratio and the impact of the disparity. The larger the disparity ratio, the greater the disparate impact on the protected class group. Moreover, this format translates easily into an assessment of the magnitude of the disparities. In our example a disparity ratio of 1.56 mean that families with children are 1.56 time as likely to be adversely impacted by the policy as are households with no children.

App. C (Bradford Decl.) at page 6.

In essence, Dr. Bradford is suggesting two approaches to calculating disparity ratios. One approach (the four-fifths rule) involves dividing, by household size class, the percentage of households without children by the percentage of households with children. This is the approach that is generally followed in cases of employment discrimination. The other approach (what Bradford terms the five-fourths rule) divides the percentage of households with children by the percentage of households without children. In Bradford's Rhode Island case, he finds it most useful to follow the five-fourths rule. In The Grenada case, the issue is more complex, partly because the exclusion policies are a bit different. I think the major point to be gained from Bradford's discussion is that whenever the ratios are very high or very low one needs to analyze them carefully to discern the nature of discrimination. This is the approach that I will follow when I discuss my calculations of the disparity ratios.

V. COMPARISONS OF KING COUNTY DATA

The Development of the Estimates for Comparison:

Data from the 2015 ACS PUMS for King County were processed so that the data for the individual sample households were grouped into two major rental categories. These categories

are households with children and households with no children. Households with children include what the Census Bureau defines as a household where there is any person under the age of 18 that is related by birth, adoption, or legal guardianship to the head of the household.

The group of households with children in this analysis also includes any household where there are persons under the age of 18 that are not related to the head of the household by birth, adoption, or legal guardianship. In the PUMS data, this inclusion of all children is defined simply as the presence of any child under 18.

Next, each of these two categories of households was divided internally into those households that have 1 person, 2 persons, 3 persons, and at least 4 persons. As my tables and charts will show, King County is characterized by quite high percentages of rental households with only one or two residents. Thus, any policies carried out by apartment owners for these sized households will have a major impact on the composition of different types of households in the Seattle area. While an analysis could be carried out for households of specific sizes above 4, the fact is that there are only small percentages in those categories, especially for renters. Thus, I have created one category with 4 or more residents.

The reported numbers in the following statistical analysis are produced by the U.S. Census Bureau, taking a sample of approximately one in 40 households in King County. While the data are available to analysts for individual households in the 2015 survey, the Census Bureau prefers that the responses be analyzed using “weights” that it has determined. These weights, giving households differential representation, are calculated on the basis of how well different population groups (such as people of color) are represented in the completed surveys relative to their rates of inclusion in the original sample that was drawn. The numerical results I report in charts and tables are thus based on the weighting procedure.

Overview of Key Differences in Sample Data

The key statistical tests involve the subgroup of King County households that include renters paying at least \$870 per month. The crucial issue is whether, controlling for household size, those with children are impacted differently in the housing market than those without children. In the ACS PUMS data file, I find that a rent of \$870 leads to the inclusion of 82.6 percent of the renter sample who report their gross rents. Because this relatively low rent cutoff is used (at the suggestion of the defendants) the overall results for the general sample are very similar to those for the sample that is emphasized below.

In **Appendix B**, I consider whether my basic results hold when I divide the rental sample so that those paying \$870 to \$1469 and those paying at least \$1470 may be analyzed separately. I investigate these subgroups because the results for those paying nearest to \$870 a month could be different than those paying much more than \$870 a month. However, I know no reason why this might occur since the issue is whether the protected class who can afford any rent above \$870 a month are treated differently than the nonprotected class. While some of the statistical details differ across the subsamples, the general patterns lead to the conclusion that small households with children experience disparate negative impact in access to rental housing.

Using the Census weighted data for King County, shown in **Table 1**, for rental households paying at least \$870/month, the estimated raw distributions when the households are broken down by both the number of residents and the presence of a child. The table shows that the total number of households with no children is between two and three times the total number of households with children ($209764/76300=2.75$).

Table 1

King County Households Subdivided by Size and Presence of Children, 2015 PUMS

Households without Children

	Sample No.	Pct. Distribution	Lo	Hi
	Without Children	Within Sample	Conf. Intv.	Conf. Intv.
1	100581	47.95	44.55	51.38
2	87056	41.50	38.15	44.86
3	13947	6.65	4.95	8.35
4 plus	8180	3.90	2.58	5.22
Total	209764	100.00		

Households with Children

	Sample No.	Pct. Distribution	Lo	Hi
	With Children	Within Sample	Conf. Intv.	Conf. Intv.
1	0	0	0	1.58
2	9805	12.86	9.07	16.31
3	26510	34.74	29.37	34.74
4 plus	39985	52.41	46.76	58.05
Total	76300	100.01		

Confidence intervals (Conf. Intv.) are adjusted, at the 95 percent level

[ACS Data are from the 2015 PUMS for King County (WA).

Sample is based on renters with gross rents of at least \$870/month]

I am primarily interested in comparing the distribution of household sizes within the separate groups of children and childless households. To do this, I need to calculate the percentage of each household size separately for the two types of living arrangements. This will tell me which types of household sizes are quite common for households of a specific type. Thus, I find that of the households with no kids, 100581 or 47.95 percent ($100581/209764$) have only one person.

By my computations, I find that of the households with children, none or 0 percent have only one member.

Why not simply compare the absolute number of one person households without children with the absolute number of one person households with children? This is not a good comparison, however, because the overall number of households without children is much greater than the overall number of households with children. I am interested in the relative distribution of household size across the various household types (children or no children), not their absolute numbers. Fellow sociologists often call “percentaging down” the approach to percentaging in **Table 1** because I am taking the percentages downward rather than across the table.

The sample data show dramatically different distribution between households without and with kids. An especially crucial comparison involves two-person households. In two-person households, I would expect some to have children. While this is true, two-person households with children only constitute 12.85 percent of all households with children. In contrast two-person households constitute 41.50 percent of all households without children.

The differences in the overall distributions can be summarized by a statistic that is commonly known as the index of dissimilarity. For a discussion of the statistic, see “Index of Dissimilarity”, Wikipedia (https://en.wikipedia.org/wiki/Index_of_dissimilarity).

The index is ideal for use in this case because it compares two percentage distributions, as I have with household size. The issue is the degree to which the distributions overlap. An index of 0.00 indicates that the distributions are exactly the same, but I know that is not true in this case. An index of 100.0 indicates that the distributions have no overlap. In case of an index of 100.0, household sizes of various types would only be found for households of no children when children are totally absent from households of these sizes. I note that there is some overlap in distribution, but there is also a big “hole” in the case of one-person households.

Across the two types of households that are defined by the presence of children, the calculated index is 77.5 which, as all indices of dissimilarity do, has a practical interpretation. It says that 77.5 percent of all households with children would have to be redistributed across household sizes to have the same distribution as the households without children. Clearly, the sample shows a massive difference in distribution of children households in comparison to childless households.

Testing for Statistically Significant Differences:

These two percentages from the PUMS sample are estimates of the actual true percentages that exist in the full population of all occupied rental housing units in King County. The test of statistical significance is a test of whether one can reasonably assume from these sample estimates that there is a difference in the true percentages of these households in the full population of households in the state. Of course, the estimated percentages are very different from each other. Because the data we are using come from a sample, however, there is random

error in the sampling process. As a result, any given random sample might produce an estimate that is different from the real percentage in the full market.

Conceptually, I calculate a confidence interval (or range of values) around the estimates we have calculated. Then, I can define a level of confidence that tells us the likelihood that the real percentage in the full King County market is located within our confidence interval. I first calculate standard errors for our sample estimate. For the PUMS data, the Census Bureau provides a technical document (see pages 27-31, https://docs.google.com/viewer?url=https%3A%2F%2Fwww2.census.gov%2Fprograms-surveys%2Facs%2Ftech_docs%2Faccuracy%2FACS_Accuracy_of_Data_2015.pdf) describing how to calculate the simple standard error and an adjusted standard error that takes account of the complex sampling design used in the ACS census surveys. I have used these directions to calculate the adjusted standard error shown in **Table 1** for each percentage.

For any given confidence level, there is a specific number of standard error deviations that define the related confidence interval above and below the estimated percentage. For example the Census Bureau typically uses a 90% confidence level in its tables. With this confidence level, one creates a confidence interval that is 1.645 standard errors higher and lower than the estimated percentage. That is, one multiplies the standard error by 1.645 and subtracts this amount from the estimated percentage to define the low end of the confidence interval (or range) and adds this amount to the estimated percentage to define the high end of the confidence interval (or range). At this confidence level, allowing for random error in the estimate, one would expect that the actual percentage in the true population would fall within this confidence interval 90% of the time.

The higher the confidence level, the greater the number of standard error deviations used to calculate the confidence interval. For example, for a 95% confidence level, one would calculate a confidence interval that is 1.96 standard deviations above and below the estimated percentage. This means that 95% of the time one would expect that the actual percentage in the true population would fall within this confidence interval.

In a test for statistical differences, one calculates the confidence interval for each percentage. Conceptually, the true percentages in the full population are assumed to be statistically different if there is no overlap in the confidence intervals for the two percentage estimates. That is, I assume that for the confidence level chosen it is likely that the true percentage in the full population could be as low as the lower limit of the confidence interval and as high as the upper limit of the confidence interval. If there is any overlap in the two confidence intervals, then there is a statistical likelihood that the true percentages for each group could actually be the same.

App. C (Bradford Decl.) at pages 10-11.

For example, assume that there is a percentage estimate for sample A of 7% and the confidence interval for this percentage ranges from a lower limit of 4% to an upper limit of 10%. Then, assume that there is a percentage estimate for

Sample B of 20% and the confidence interval ranges from a lower limit of 9% to an upper limit of 31%. Even though the estimated percentages for Sample A and Sample B are quite different (7% and 20%), I can not assume that this difference is statistically significant. This is because there is some overlap in their confidence intervals. The lower limit for Sample B (9%) falls below the upper limit of Sample A (10%). Therefore, the difference in the estimated percentages is not considered statistically significant.

The higher the confidence level, the greater the range of the confidence interval will be. All else being equal, using a higher confidence level also makes it more likely that there will be some overlap in the confidence intervals of different percentages and less likely that the differences in the estimated percentages for two groups will be statistically significant.

The 95% confidence level is commonly used in disparate impact cases. Most statisticians believe that being right 95 percent of the time is good enough. The confidence interval for a 95% confidence level is plus or minus 1.96 standard error deviations.

Both the standard error and the confidence intervals are extremely sensitive to the size of the sample and the nature of the sampling design. The larger the sample size, the smaller the standard error. Consequently, the confidence interval will also be smaller and (all else being equal) there is more likelihood that there will be statistically significant differences in the percentages used in the test. On the other hand, in the census samples, there are adjustments to the standard error related to the complexities of the sampling design for selecting households that are included in the sample. These adjustments increase the standard error. This increases the range of the confidence interval. All else being equal, this makes it more likely that there will be some overlap in the confidence intervals of different percentages and less likely that differences in the estimated percentages for two groups will be statistically significant.

App. C (Bradford Decl.) at page 11.

Returning to **Table 1**, above, the standard errors and confidence intervals for a 95% confidence level are represented in the table.

Given the importance of two-person households to this analysis, I present in **Table 2** some of the calculations that were necessary to determine the confidence intervals. **Table 1** shows a sample estimate of 12.85 percent. That is, the census estimates that 12.85 percent of all households with children live in two-person households.

I now move on to calculating the confidence interval for 12.85 percent. Using the formula for calculating the standard error of this estimate as provided by the Census Bureau, I found that the standard error of the estimate of the percentage of households with children that are households with two persons is 1.21. Because of the complex design used for sampling, the Census Bureau

provides adjustment factors to this standard error to account for the sampling variation for different population and housing characteristics. Therefore, we refer to this standard error as the "unadjusted standard error". The adjustment factor for data related to the presence of children in households is 1.6. I obtain an adjusted standard error deviation by multiplying the unadjusted standard error by this design factor and get the adjusted standard error of 1.93 (1.21% times 1.6 = 1.93%).

Table 2

Test of Significance Comparing Households In King County (WA) for the 2015 American Community Survey (ACS) PUMS Data for the Percentage of 2-Person Households Without and With Children

Estimate for Households *without* Children:

Base ACS Number of Households without Children	209764
ACS Number of 2-Person Households without Children	87056
Percent Households without Children that Have 2 Persons	41.50
Unadjusted Standard Error	1.71
Adjustment for Census Sample Design Factor	1.6
Adjusted Standard Error	3.36
Number of Standard Error Deviations for a 95% Confidence level	1.96
Lower limit of Confidence Interval to Upper limit of Confidence Interval	
38.14	44.86

Estimate for Households *with* Children:

Base ACS Number of Households with Children	76300
ACS Number of 2-Person Households with Children	9805
Percent Households with Children that Have 2 Persons	12.86
Unadjusted Standard Error	1.93
Adjustment for Census Sample Design Factor	1.6
Adjusted Standard Error	3.78
Number of Standard Error Deviations for a 95% Confidence level	1.96
Lower limit of Confidence Interval to Upper limit of Confidence Interval	
9.08	16.64

Test of Significance at the 95% Level: The difference in the percentages is statistically significant if there is no overlap in the confidence intervals around each percentage.

[ACS Data are from the 2015 PUMS for King County (WA). Sample is based on renters with gross rents of at least \$870/month]

Tests with a 95% confidence level require a confidence interval around the estimated percentage that is plus or minus 1.96 standard error deviations. In the case of data from the sample files of the census, an adjusted standard error calculation is used. This creates a confidence interval around the 12.85 percentage that is plus or minus 3.78% (1.93% times 1.96 = 3.78%). Therefore, the lower limit of the confidence interval around the percentage of households with children that have 2 persons is 9.08% (12.86% - 3.78% = 9.08%) and the upper limit of the confidence interval is 16.63% (12.86% + 3.78% = 16.63 percent). I now know that 95 percent of the times that similar samples are drawn they will have a universe mean of 9.08 to 16.64 percent.

If I wanted to be even more certain about the universe mean, I could set a higher confidence level; 99 percent is sometimes used. This requires 2.56 standard error deviations. So, if the 99 percent confidence level was desired, I would substitute 2.56 for 1.96 in the above calculations. This would provide us with more certainty about the universe level, but the interval would be wider.

The same procedure is followed to calculate the confidence interval for the percentage of households without children that contain two persons. In this case, the estimated percentage is 41.50%. The standard error of the estimated percentage is 1.07%. The adjustment for the design factor is 1.6. The adjusted standard error of the estimated percentage is 1.71% (1.07% times 1.6 = 1.71%). The confidence interval is 41.50% plus or minus 1.96 adjusted standard error deviations - or plus or minus 3.36% (1.71% times 1.96 = 3.36%). Therefore, the confidence interval ranges from 38.14% (41.50% - 3.36%) to 44.86% (41.50% + 3.36 %).

Conceptually, the difference in the estimated percentages of households with two persons is statistically significant if there is no overlap in the two confidence intervals [This is also true for the other household sizes]. That is, if the lower limit of the confidence interval for the percentage of households without children that have two persons (38.14%) is higher than the upper limit of the confidence interval for the percentage of household with children that have two persons (16.63%). Indeed, there is a spread of 21.51% between these two limits. Therefore, the difference between the percentages of households with children and households with no children that all have two persons is clearly statistically significant. That is, the difference in the proportion of housing units with children that have two persons and the proportion of households without children that have two persons is statistically significant. Thus, a policy that prohibited occupancy of a unit by households with two persons has an adverse disproportionate effect on households with children. So, it appears that The Granada policy of restricting household size to one person is not the end of the story. A policy of restricting household size to

two persons also has a deleterious effect on the housing opportunities of households with children.

The calculation of related statistics for households of one, three, and four or more persons is quite similar to the calculations for two person households. Table 2 shows the confidence intervals for each sized household, when divided by the presence of children. One person households have, almost by definition, no children. Households with 3 or 4+ members are quite overrepresented when they have children. In all comparisons of households with and without children, the confidence intervals suggest that the patterns for households with and without children are quite different, allowing us to be sure that they are very real in the larger King County population.

I note that the confidence interval for household size of one is difficult to calculate because there are no households with children in this comparison. The confidence interval cannot realistically have a lower bound below 0.0. To correct for this problem in calculating confidence intervals, the Census Bureau suggests that one should substitute of value of 2.0 percent for the sample mean. I have done this and shown the results that are consistent with this procedure.

The differences in the census sample are quite striking, and the probability of overlap in the universe is extremely unlikely.

Calculating Disparity Ratios

As indicated above, I can calculate disparity ratios from the sample data as our best measures of the distribution of children across household sizes. Following Dr. Bradford's approach to disparity through the five-fourths rule, I can clearly demonstrate disparity. Let's take the cases of three and four+ persons per household. I find that the disparity ratio for three-person households is 5.22 (34.74 percent divided by 6.65 percent). The disparity ratio for four+-person households is 13.44 (52.41 percent divided by 3.90 percent). Clearly, the relative percentages of three and four+-person households are much greater for households with children, indicating their relative difficulty in qualifying for the Grenada with its one-person per unit requirement.

However, if I follow Bradford's procedure for the one and two-person households, the resulting patterns will be quite different. The disparity ratio for the one-person households is 0 (0.00 percent divided by 47.95 percent); the disparity ratio for the two-person household would be .31(12.85 percent divided by 41.50 percent). Thus, these types of households with children have low percentages relative to similar sized households without children. But one-person households with children are extremely unlikely given common social and legal standards. Even though two-person households with children are under-represented relative to two-person households without children, those with children still form by almost any standard a significant share of households with children. Furthermore, the one person per unit rule as practiced by the Granada may discourage the formation of two-person households with children.

I could obtain much different disparity ratios by following the alternate approach, the fourth-fifth rule. In this situation the disparity ratios would be high for the 1 (47.95/0.00) and two-person (41.50/12.85) households and low for the three (6.65/34.74) and four+-(3.90/52.41) person households.

The key point is that, regardless of the approach to calculating the disparity ratio, the distributions of households between those without and with children are quite strikingly different. Whenever these ratios are extremely high or low, as in this situation, there are clearly striking differences in household structure that will influence housing opportunities, given various rules for the maximum household sizes. I return to this issue in the next section where I make other statistical comparisons.

Other comparisons

Having dealt with the key issue of disparity ratios, I turn to providing some other statistical comparisons that might be useful in this case. I will summarize some comparisons of households in the protected class (with a child) versus other types of households, with the caution that the results are based on sample data. However, the confidence intervals for the data in **Table 1** are small enough to support drawing conclusions about general patterns.

First, I focus on the number of renters who pay enough to live at The Granada. I determine (among these renters) the percentage of excluded households (those having more than one member). These are all households in the rental group with more than one resident, regardless of the presence of children. Some 64.84 percent of this group are excluded from The Granada. I then compare this with the analogous percent of the protected renters (who have a child) that are excluded. This is 100 percent since, according to the census data, all households with children have at least two members.

Conclusion: Having a child has a great impact on exclusion. Having more than one household member also has an impact but the greatest impact of The Granada policy seems to occur for households with children.

Second, I compare the percentage of rental households in the protected class (of having children) that are excluded to the percentage of households not containing children in the rental population in King County.

The sample data show that 100 percent of the protected rental class (having children) are excluded. This occurs because all households with children have at least two members, contrary to The Granada policy. I then focus on the renters in the non-protected class (having no children). Of these households, 52.16 percent are excluded from residence at The Granada. This occurs because slightly more than half of the childless households have only one person.

Conclusion: Having a child excludes one from residence at The Granada. Not having a child excludes about half the other renters.

Third, I compare the percentage of households in the protected class in the rental population that are excluded from the Granada to the percentage of households in the protected class in the rental population in King County.

The sample data show that 100 percent of households with protected status (having a child) are excluded. The percentage of protected households in the King County rental population is 26.67 percent.

Conclusion: Households with children are a significant segment of the King County rental population. Given their numbers, the Granada's occupancy restriction has substantively negative impact on the availability of housing for families with children.

VI. CONCLUSIONS

The bulk of my report has followed the methodology of Dr. Bradford in a Rhode Island case (Disparate Impact Report Submitted by Dr. Calvin P. Bradford, July 3, 2014. Case CA No. 13-445M. U.S. District Court for the District of Rhode Island. Rhode Island Commission for Human Rights v. Noreen D. Gaul, et al.) I would describe this as the Disparity Ratio approach.

Dr. Bradford was concerned with the issue of whether households of different sizes, distinguished by the presence or absence of children, were limited in their housing choices by the policies of specific rental managers. He argued that rental managers who followed specific rules on the size of households were also, in effect, making decisions on the availability of housing to households having children since the distribution by size of households with children was different than the distribution by size of households without children. His evidence, as my evidence in The Granada case, supported this argument.

Dr. Bradford used a well-constructed and reliable statistical methodology in two ways. First, he showed that census sample data indicated quite striking disparity ratios in the presence of children when households were analyzed in different size classes. These differences were consistent with the argument that rental policies on household size led to limited rental opportunities for households with children in specific size classes. Second, using the methodology of statistical inference, he calculated confidence intervals for the samples of households, divided by the presence of children. The results of his analysis of the census samples showed striking disparities in household size, by the presence of children, with a high degree of certainty, in the universe of Rhode Island households. He could thus infer that the types of households with children that were eliminated from apartment developments by the size rule were important in the total Rhode Island rental population.

While the details of the Rhode Island case differ from The Granada case, my general conclusions are very similar, and equally reliable. A policy or practice that prohibits occupancy of an apartment by more than 1 person per housing unit has a statistically significant disparate impact on households with children in King County, WA. Almost by definition, it eliminates any one-person households that have residents below 18 years. But the policy or practice that prohibits

occupancy of an apartment by more than one person also has a negative relationship with housing opportunities for households with children, almost always at least two persons (an adult and a child) in number.

The differences in the effect of the presence of children within households of the same size are striking. By using the index of dissimilarity, I showed that over three-fourths of all households with children would have to redistribute themselves across household size classes to have the same distribution as households without children.

Using Dr. Bradford's ratio disparity approach, I find that the disparity is especially severe for households with children of three or four members, who are strikingly overrepresented in the census sample relative to households without children of three or four members. But there is also a large pool of (only) two person households with children who are eliminated from apartments when the maximum number of residents per unit is one.

Again following Dr. Bradford's general approach, I find that King County sample differences by household size between the childless and the child-present households in the King County population are statistically significant at the 95 percent confidence level. This allows me to express a great deal of certainty that the patterns and disparities I found in the King County census sample are also evident to a high degree in the universe of King County rental households. Using statistical inference, I can be certain that the general patterns are followed.

I have also used, more briefly, another approach to analyzing housing opportunities for households with children, following the general methodology used in other occupancy restriction cases. That approach involves calculating the quantitative outcome of specific housing policies by landlords in regard to protected and non-protected classes of individuals. This might be called the Overall Comparison approach since it produces fairly basic statistics that compare the overall experience of protected and non-protected classes.

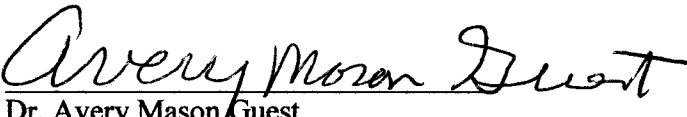
The three comparisons at the end of my report (subtitled "other comparisons") show convincingly that households with children suffer disproportionately in the rental housing market by policies such as those practiced by the Granada. For instance, using the PUMS data, I compare all households in the rental group with more than one resident, regardless of the presence of children, with the analogous percent of the protected renters (who have a child) that are excluded. Some 64.84 percent of the first group are excluded from the Granada. But 100 percent of the second group are excluded since, according to the census data, all households with children have at least two members.

The current policy of The Granada Apartments reinforces striking differences in the current distribution of households with children versus those without children. In essence, households with children of different size classes are being provided limited opportunity in the rental market by such policies.

As with any professional opinion, this opinion is subject to change based on the production and review of additional data and documents.

I declare under penalty of perjury of the laws of the United States of America and the State of Washington that the foregoing is true and correct.

DATED this 7th day of January, 2017, at Seattle, Washington.


Dr. Avery Mason Guest

CERTIFICATE OF SERVICE

I certify that on the date noted below I electronically filed this document entitled DECLARATION OF DR. AVERY MASON GUEST IN SUPPORT OF PLAINTIFF'S RESPONSE IN OPPOSITION TO DEFENDANT'S MOTION TO DISMISS, AND PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT with the Clerk of the Court using the CM/ECF system which will send notification of such filing to the following persons:

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DATED this 9th day of January, 2017, at Seattle, Washington.

/s/Esmeralda Valenzuela
Esmeralda Valenzuela, Legal Assistant